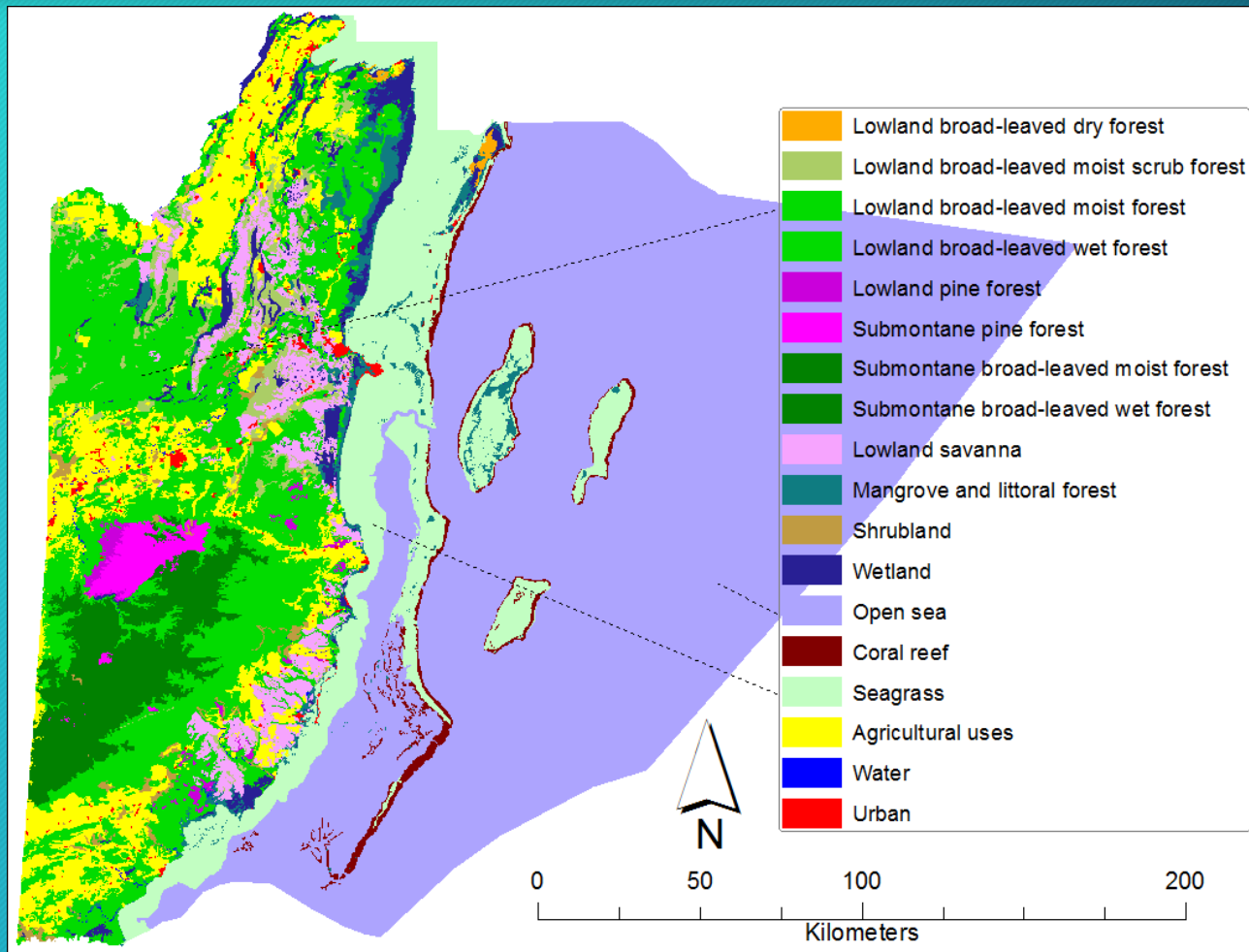


Belize Country Perspective on Ecosystem Degradation | Restoration Potential

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Belize Ecosystems



Broad Categories:

13 Terrestrial

3 Marine

Meerman, 2011

Ecosystem Loss 2010-2012

Ecosystem Type	Area in 2010 (hectares)	Annual Loss (hectares)	Annual Rate of Loss (%)
Pine Forest	25,247	355	1.4 % yr ⁻¹
Broadleaf Forest	1,324,191	12,070	0.9 % yr ⁻¹
Mangrove Forest	20,488	102	0.5 % yr ⁻¹
Mixed Forest	4,290	19	0.4 % yr ⁻¹

Degradation is usually in synchrony with deforestation

Agents of Degradation

Terrestrial:

- Hurricanes
- Forest fires (Natural and Anthropogenic)
- Forest pests (Bark Beetle)
- Logging, Gold mining, other extractive uses

Marine:

- Changes in water temperature
- Overfishing
- Increased solar irradiance
- Sedimentation
- Chemical pollutants
- Climate change

Saquie *et al.*, (2010)
Martinez (2012)

Major ecosystems undergoing degradation

- Upland pine forest - Bark Beetle + Fire
- Lowland pine forest - Fire
- Coral reefs - Bleaching, Algae Dominance
- Broadleaf forest - Hurricane + Fire + Illegal logging



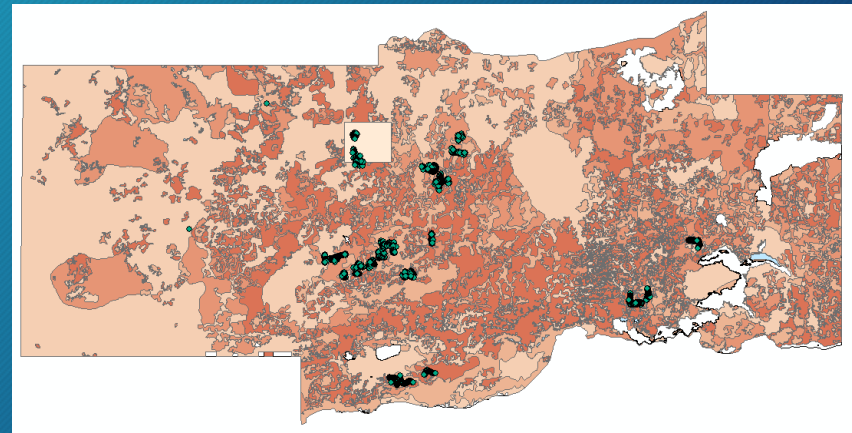
Restoration Initiatives

- Reforestation of Bark Beetle areas
 - Early 2000s
 - Several 1000 ha replanted in the Mountain Pine Ridge Forest Reserve
 - Couple with fire protection
 - Need for additional areas restored



Restoration Initiatives

- Enrichment planting of hurricane degraded forests
 - Post-Richard (2010)
 - Several 1000s Mahogany (*Swietenia macrophylla*) seedlings planted
 - Need for silvicultural tending



Restoration Initiatives

- Reseeding *Diadema* and Acropoid populations
 - In-situ gene bank nurseries of *Acropora cervicornis*, *A. palmate* and *A. prolifera*
 - Six nurseries established and planted with 354 corals
 - Colonies trimmed to produce fragments for transplanting to restoration sites
 - Approx. 4,000 corals were planted to reef patches within Laughing Bird Caye National Park



Potential Initiatives

- No-take zones to protect marine grazers and reduce algae dominance
 - Ensure predator prey balance, e.g. groupers prey on damselfish which make their algae nests in Acropoid corals
- Fire protection for hurricane-affected forests
 - Fire-fighting and fire use capacity building
- Restoration of lowland pine savannah
 - Tilling of hardpan and reintroduction of pine seedlings + suitable fire regime
- Restoration of mangrove habitat (land tenure)

Prioritization

- Is there institutional capacity?
- Institutional/legal mandate to carry out restoration initiatives or maintain ecosystem integrity?
- Is the rate of ecosystem degradation/loss above a critical threshold?
- Financial sustainability of restoration initiatives

Thank You.